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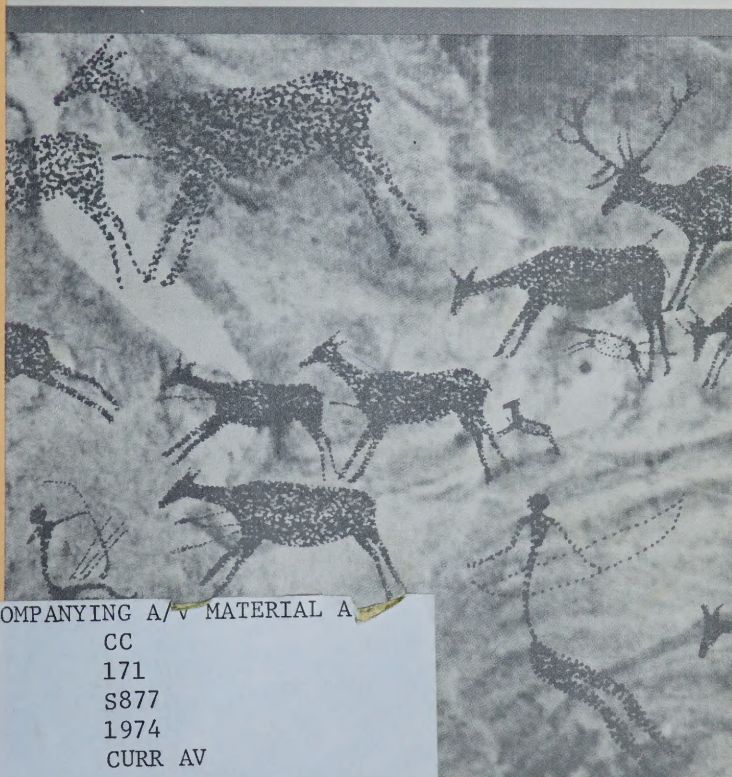
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Teachers' Guide

Stone Age Man

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Man in His World



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MAN IN HIS WORLD

Teacher's Guide

Stone Age Man

Douglas M. Gray
Paul B. Park

Man In His World Series

James Forrester
Co-ordinating Editor

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Stone Age Man

Stone Age Man is organized in five sections:

The Family of Man (pages 3-19)

The Culture of Man (20-29)

The Old Stone Age (30-38)

The Coming of the New Stone Age (39-55)

The Last Chapter (56-63)

These sections are arranged in approximate chronological sequence from the earliest days of pre-humanity through to the present, but no attempt is made to cover the subject of stone age man exhaustively for, indeed, the stone age is probably contemporaneous with the existence of the human race.

"Man," it has been said, "is a tool-using animal" — a definition which, if accepted, offers not just a description, but an explanation for the origin and evolution of the human race; the emphasis throughout this book is on the crucial importance of tools and tool-using, and on the information that can be gained about different societies through the study of their material culture. The object of this book, however, is not to teach the theories of evolution but, among other things, to ask students to investigate these theories critically. This is a social science book using the ideas and techniques of the social scientist. By this we mean that students should learn to look at evidence and try to formulate theories or ideas from it. It is basically a critical approach and we in no way intend students to accept any of the theories of evolution suggested here without question.

The Family of Man (pages 3-19)

This section introduces the concept of human evolution and uses the analogy of the family to suggest the kind of relationship that exists between man and other primates. It sketches in some of the kinds of evidence used by scientists in supporting their theories, and introduces Dr. Louis B. Leakey, and his work at Olduvai Gorge, in case students should begin to feel that scientists are unhuman, unemotional types.

Unit 1: What You Should Know About Your Family (pages 4-5): The class should have studied the family and the obvious relationships within the family. In Unit 1 students are asked to review these basic relationships and read the chart. The chart is essential because without it we cannot easily proceed to the more complex relationships scientists have suggested in searching for the origin of the human race.

The dog, Patches, may be thought of as "family" in the picture, but she has no place on the chart. Mary Smith joins the Jones chart through marriage. She, of course, becomes Mrs. Jones, the children take the name Jones, as is the custom in our patrilineal society, and the line of descent is shown passing through her husband. On the other hand, in the case of the Browns, as seen on page 7, the line passes through Janet, since only she is of the Jones line of descent. If this were the Brown family tree it would, of course, pass through Tim Brown.

Lesson Focus: Students should be able to demonstrate their skill in interpreting a picture and to translate evidence from pictorial to graphic form. They should

test initial inferences from selected evidence in the chart and identify and apply rules governing usage of the chart.

Teaching Suggestions: Ask students if they are related to any other members of the class or the school, and identify their relationship. Looking only at the picture, students should be able to answer such questions as: How can you tell it is a family? How can you tell it was taken in 1965? Can you tell the age of the people in the family? Looking only at the chart, ask students how the chart helps them check the answers to questions about the picture.

Extension: Mount a family snapshot on a piece of paper and prepare a chart representing the family.

Unit 2: What Mom and Dad Can Help You Know

(pages 6-8): Students should be able to apply skills learnt in Unit 1 to the new chart and interpret relationships arising from the new evidence. For students to understand what scientists claim is the relationship between apes and humans, they first need to understand family relationships to the extent of recognizing cousins.

Procedural rules for reading the charts:

1. The chronological progression is from the base up. (This is not necessarily the case in all genealogical charts.)
2. The equals sign (=) indicates marriage.
3. The line of descent always passes through the descendant.
4. Order of birth of children is from left to right.
5. Each generation of offspring is on the same horizontal plane.
6. Elapsed time is indicated by a vertical time line.

Teaching Suggestions: Mark the Jones chart on the classroom floor and have the students take places on the chart as members of the family. Students can then identify the relationships between members, add additional branches and explain the relations added. Establish definitions of terms such as cousin, niece, granddaughter, etc. and draw up any additional rules needed.

Answers to Questions:

2. Some members of the family never married.
3. Students should apply the rules for reading the chart and understand that all people on one level belong to the same generation. Pat and Janet are of the same generation and would be called cousins. Students should be directed to use the relationships shown in the box, although not all are illustrated in the chart.
4. Students may have problems with some of the later parts of the question, but they should recognize that the chart is fine for specific information, but ignores human or emotional values shown in the picture. Patches and her pups also illustrate this.
- 6-8. These questions require parental assistance, but should emphasize the importance of seeking accurate, reliable information.
9. The dates provide an obvious clue, but students should be encouraged to examine such things as height, changes in dress lengths, men's ties and pants, hair styles, etc.

Extension: Students could study more complicated family trees, such as those of European royal families.

Unit 3: What Scientists Think They Know (page 9): Students should apply the skills they have learnt, and also be able to distinguish between scientific views and views that they hold themselves. They should look for more evidence to test the chart and realize that their views can be challenged by others.

The title of Unit 3 is carefully worded to read, "What Scientists *Think* They Know," and refers back to the title of the previous Unit. We are trying to arouse the critical faculties in students and to encourage them to seek further evidence and question existing theories. Students should be encouraged to learn how the social scientist arrives at conclusions about evolution even though they may not believe in these conclusions. Obviously the evidence presented will build a case to support evolution, but we hope this will only encourage students to rethink many of their own ideas, not accept what is presented.

Clearly, scientific theories of evolution are not the only theories about man's origins. However, should a teacher include biblical theories on the origins of man, care should be taken not to use scientific methods to evaluate them. There are obviously other standards by which to measure such theories and a teacher should be very careful about throwing doubt on a student's beliefs because they do not conform to the criteria of the social sciences.

Science is not the repository of all knowledge and truth, and man's mind has its limitations in the search for knowledge and truth. In some cases, acts of faith or statements of belief can overcome these limitations in the search for greater truths.

Teaching Suggestions: Give five students different dictionaries to look up the definitions of the words "scientist" and "anthropologist." Discuss with the rest of the class any conflicting definitions and try to arrive at a consensus.

Ask the class to memorize the chart on page 9 and have several students reconstruct it on the blackboard. What does the class think it means? What conclusions are suggested by the chart and the related picture? How does the chart compare to the previous two? Circle the specific weaknesses in the chart and discuss whether students accept scientists' theories about the origins of man. Sample conclusions might be:

- Any chart covering that period in time will be inaccurate.
- There is no evidence to support any such claims.
- The whole idea is contrary to what I believe.
- It's a fascinating idea, but can scientists prove it?
- This chart can't be verified the way we checked out the other two charts.

Answers to Questions:

1. Students may object to the suggested family relationship, and there may be communities where the concept of evolution is a sensitive matter. We can only emphasize the approach suggested in the introduction to this guide.
2. The distinction between *you the individual*, and *you as a member of a species or group called primate*, is a useful one. The word "man" is generic and embraces all members of the human race, our particular branch of the primate tree.

3. The chart supports the thesis that we are all members of the same tree and have a common ancestor dating from a long way back.

4. Our exact relationship would be identified as cousins, several times removed of course.

5. This "family tree" is very sketchy. There is no reason to think it is wrong, but certainly no reason to think it is right. There is no evidence either way, and no one would accept such a sketchy thing without evidence. The logical reaction is to suspend judgment and search for evidence to confirm or deny the hypothesis.

Why Scientists Think So (pages 10-11): Bones and bone structures are assumed to provide a valid clue to determining relationships. The two that appear most similar are those of the ape and the human. The others are in varying degrees different in structure and in function. This is not to say a relationship between man and ape has been proven, but it does suggest that we continue this line of inquiry with this hypothesis in mind. There are sufficient similarities to allow the hypothesis that all animals share some common ancestry, and that the ape and the human are closely related.

Teaching Suggestions: Have students trace each skeleton on a separate sheet of paper and compare them side by side. Students can rank the skeletons in order of similarity to man.

Let's Take a Closer Look (pages 12-13): The pictures provide a better look at the skulls, jaws and teeth of apes and man. The words on page 13 suggest points of comparison. However, it is important that students recognize that we are not apes and are not descended from apes. We may have a common ancestor but if the students compare the many points of identification they will discover many clear differences. These pages tend to point to very strong similarities, but also reveal unmistakable differences.

Teaching Suggestions: Have students trace the two skulls onto separate sheets of transparent acetate, one in red and one in blue. Place one as nearly as possible over the other and project the overlay on an overhead projector so comparisons can be made more easily.

Unit 4: What Scientists Think About You (pages 14-15): This unit should suggest to students that the human branch of the tree has, itself, gone through considerable changes. As suggested by the time chart, it took many hundreds of thousands of years before man stood erect, became smooth skinned and hairless, and developed a superior intelligence. By examining the four skulls, students can try to test the validity of this hypothesis.

Teaching Suggestions: Students should be able to identify all the skulls as human, but comparisons could again be made easier by tracing them on transparent acetate. Students should use specific points of comparison to determine the order of development. The order is 3, 1, 4, 2.

Extension: Students could do some research to find out the approximate date and names of these skulls. They are:

1. Solo Man, Java, ca 60000 BC
2. Homo Sapiens, Modern Man, ca 35000BC

3. Australopithecus, South Africa, ca 1 700 000 BC
4. Neanderthal Man, Germany, ca 50 000 BC

Unit 5: What Did We Look Like Long Ago? (page 15): Students should learn to use their new knowledge to infer what man might have looked like. This is not an exercise in imagination, but in deduction. Let students try re-creating the likeness of primitive man, but the face must conform to the bone structure. The skull provided in the students' books belongs to Java Man who is believed to have preceded Solo Man by several hundreds of thousands of years.

Unit 6: What We Look Like Now (page 16): The chart on pages 14-15 did not show the variations in modern man. Some of these are shown on page 16. The questions suggest that environmental conditions may have had something to do with the varieties of modern man. Some scientists suggest that there is an unmistakable correlation between what we look like and the environmental conditions we live in.

Students should understand that there are physical differences between people from different parts of the world and should investigate the different physical environments in which these people live. A map of the world might be helpful in pointing out where these different people come from.

Extension: Students could be encouraged to make suggestions or research to find out what effect environmental factors have on physical features. The following chart shows one theory.

Rice diet	Reduced body size
Meat diet	Muscularity
Climate	Bodily proportions
Sunlight	Skin pigmentation
Heat	Hair shape
Cold and snow glare	Epicanthic fold
Extreme cold	Low nasal bridge, flat face
Extreme cold	Sparse, coarse, straight hair
	(Coon, Garn and Birdsell, 1950)

Unit 7: Brains Do Make a Difference (page 17):

Students should understand that there are more than physical differences between humans and apes. In fact, the great differentiating factor is in people's ability to think and reason. Students should be encouraged to define and differentiate between the words listed.

Question 2. The shaded areas suggest that the monkey's muscle and sensory systems are equal if not superior to those of man.

3. The unshaded areas must perform tasks other than those specified. These would embrace the ability to reason, to remember, to know, to create, etc. Clearly, if the brain is a valid indicator, man has a great capacity for these intellectual functions while the ape does not.

4. This suggests that the comparison is not simply qualitative, but also quantitative. In judging the weight or size of the brain, it is important to assess it in relation to the mass of the body of which it is a part.

5. The distinctiveness of being human is not simply a physical matter, but embraces the ability to reason and to develop a lifestyle that is peculiarly human.

Extension: Students could be encouraged to investigate further in the area of differences between animal and human intelligence.

Unit 8: A Scientist Who Studied Old Bones (pages 18-19): Students should begin to have some understanding of the practical aspects of archaeology. This story could be used to start a discussion on or further research into archaeological methods and some of the practical problems that can arise.

Extension: Students could be encouraged to make a model in clay or plasticine of a cross section of the Olduvai Gorge showing where the major finds were located. Slides or a film strip of an archaeological dig could also be used.

The Culture of Man (pages 20-29)

The introduction of the brain on page 14 provides a bridge to the development of this chapter. Besides the physical emergence of man, he is also developing through his growing ability to reason and to create what we call culture. The physical and the cultural are indivisible; the one interacts with the other. For instance, man learns to cook his food (fire is a cultural tool). This means that he no longer needs the ripping canine teeth, the massive jaws, etc. Of course, fire is not the only explanation for how man's jaw evolved, but it is a contributing factor. Physical, environmental and cultural factors should not be thought of as mutually exclusive.

Unit 1: In Search of Food (pages 20-23): Students should come to understand the meaning of culture through studying and discussing the illustrations. Read each picture-story in normal sequence across the pages, then examine the pictures from both stories in pairs. Both differences and similarities should be carefully examined.

Question 1. The great ape, or gorilla, is a vegetarian.

However, it should be pointed out that some of the smaller apes eat meat. The one illustrated is a gorilla.

2. The giraffe has developed a long neck so that it can easily reach food growing in high places. Students should be reminded of the first chapter, where evolutionary processes were discussed.

3. Unlike the giraffe, man and the apes are not constantly looking for food in high places. They usually eat more accessible foods. Also, both man and the apes are capable of devising a tool of some sort as a substitute for the giraffe's long neck.

4, 5, 6. Students should observe that the man has not been wasting his time but, rather than engaging in haphazard throwing, he has selected the best available tool (a straight, green sapling) to do the job. The pictures suggest that he got his food as quickly as the ape and with a lot less effort.

7. The man realized that the pole was worth keeping for future food gathering, and through the accident of burning the end of the pole and his attempts to remove the char, he improved his weapon by creating a sharpened end. Man deliberately cut what seemed the best tool for the job and then improved upon it. The ape does not have sufficient intelligence to do all these things.

8. The pole is now a very effective spear and man can gather food quickly and efficiently and has leisure

time for other things, not necessarily sleeping.

9. The son quickly learned the art of spear-making from his father so the new tool does not have to be re-invented all over again. The son can now begin to improve on the father's spear. This accumulation of knowledge is a key to man's development.

14. To be an artifact the object must appear to have been used by man or created by man. The pole would be an artifact because the trained eye would see that it had been cut by some form of higher intelligence.

Extensions: Students could be asked to look up the meaning of the words "culture" and "artifact" in different dictionaries and discuss the meanings given until some consensus is reached.

Students could add new pictures to the series as new ideas of cultural development are discussed.

Unit 2: Searching for Artifacts (page 24): Students should become familiar with what is meant by artifact and culture, and should also begin to be aware of the significance of the lack of evidence of man's intervention. Students could be divided into groups and asked to investigate thoroughly one of the pictures and discuss the artifacts, if any, and their cultural significance. This could then be followed by a joint discussion and pooling of ideas.

There is no evidence of man at the first location and therefore no artifacts can be identified. On the basis of the evidence we have, a fire was caused by natural forces, in this case a bolt of lightning.

The second location is an example of a domestic fire. It is carefully controlled and has been built by some higher intelligence, for the evidence suggests that the materials that are burning have been carefully selected, gathered, cut and piled.

The match and the lighted candle are intelligent methods of keeping a controlled flame burning for a long time. They are old-fashioned to us, but extremely sophisticated compared to the campfire.

The next object is obviously an artifact, the product of an industrial culture that knows how to manufacture in metals and to process and preserve foods. It suggests a lifestyle that pollutes the countryside with inorganic litter.

The tomato plant in location six raises the question of whether a natural object can also be an artifact. Man's handiwork is not as obvious in this case. If the plant is wild, it is not an artifact. But if it is well pruned or the fruit plump and plentiful, then these are signs that it has been cared for by some intelligence. It would then be a domesticated plant and could be defined as an artifact.

The two remaining pictures demonstrate the difference between a tree that has fallen due to natural causes (wind) and one that has been felled by some means that shows human intelligence (a saw).

Unit 3: A Modern Artifact (page 25): The children might play the role of the anthropologist of the future who is analyzing the pen. If they have trouble getting started, questions could be asked about different ways of writing, such as scratching in sand with a stick or using a quill pen, which would set the ballpoint in historical perspective.

In analyzing the pen students should be encouraged

to bring out at least some of the following points.

These people were well advanced in the science of metallurgy and plastics. They had a highly developed economy as shown by their advanced processes of mass production. Any system of productivity that can turn out such a complex artifact at such a low unit price has to be advanced. These pen-culture people still used a system of capitalism as the trade mark "Bic" and the patent registration suggest. The pen reflects an age of nationalism, for historians identify the word "Canada" with a nation that was known to exist at that time. The economy used a system of currency probably based on the decimal system as the sign ¢ was the symbol for cent. The economy was highly diversified as the artifact was only one of several variations of the product (deluxe fine point). The culture of the age used an archaic form of the language, known as English. The functional operation of this specimen, a self-contained, disposable make, places it in the post-World War II era. The quality of ink in use would suggest it was made in the 1960s or 1970s. Improved forms of these ball point pens continued in use right up to AD 2000 when they were superseded by electronic writing instruments.

Although the style of writing on the pen is the old print form, the nature of the pen as a writing instrument would suggest a free-flowing, or running style of writing. The artifact also leads us to believe that since it is a product of mass production, the general mass of the populace must have been literate.

Extensions: Students could bring other modern artifacts to class and make a display to show aspects of our culture.

A display could be mounted showing the development of writing tools from sticks to wax tablets, quills, dip pens, and so on.

Unit 4: Man and Fire (pages 26-27): Using the pictures as evidence, students should try to discover some of the new possibilities open to stone age man that the domestication of fire made possible. Some of these are warmth, security, light, change in diet, more leisure, superstition, improved technology and torture. Students could be divided into groups to discuss these changes in more detail.

Extensions: Students could experiment with clay in fire to see how this discovery could help stone age man. Menus of new, improved diets could be drawn up.

Unit 5: A Very Old Artifact (page 28): To the trained eye this artifact is an instrument devised by an intelligent being. Its size and shape suggest it would fit comfortably into a person's hand. It is significant that it is made of flint, a rather rare type of rock used by early man for tool making. The fact that the rock has symmetry suggests that it has probably been made deliberately rather than by the accidental processes of nature. Its weight and design suggest that it would function best as an axe, in this case a hand-axe. It appears sharp enough to cut, as well as heavy enough to smash.

However, it could by a remarkable coincidence have been fashioned by nature. The finding of this flint *in situ* along with others that are of similar design and along with other known artifacts of man

makes the judgement that it is an artifact fairly reliable. Students should learn to draw conclusions from accumulated evidence and appreciate the relationships among artifacts.

Extension: Discuss how these tools might have been made and what they would have been used for.

Unit 6: Four Cultures of Today (page 29): Students should not think of culture as simply a series of tools, but as anything that man has learned. The cultural styles shown in the pictures are the product of a variety of environments. Students should recognize that concepts such as industrialism, subsistence, religion and tradition have influenced the cultural levels shown in these pictures.

Question 1. They are all family pictures.

2. Picture 2 is closest to our culture as it shows many of the cultural attributes of modern industrial society. The fact that the people themselves are Japanese has little to do with it, although there is evidence of an oriental culture. Fashions, etiquette, social status, etc. are all expressions of a culture.

3. The first picture seems to suggest a hybrid culture, drawing on both advanced and primitive technology. As can be seen, this culture has acquired some of the benefits of our industrial society — an oil drum and some articles of clothing.

4. Picture 3 shows a culture that rests on a frontier form of subsistence. The log cabin plastered with mud suggests the primitive nature of the house. These people are perhaps immigrants bringing their culture to a new land.

5. The fourth picture depicts a family relationship that is unacceptable to our culture, which condones the monogamous, nuclear family consisting of one husband, one wife, and their offspring. The family we see here has one man and three wives.

The Old Stone Age (pages 30-38)

Unit 1: Tools That Belonged to Early Man (pages 30-31): First, identify and name all the tools on page 30, and arrive at a class consensus on what each was used for. The tools are 1. Scraper 2. Arrowhead 3. Hand-axe 4. Spokeshave 5. Spearhead 6. Hammer 7. Knife 8. Chopper

The class might then split up into small groups to work through the remaining questions on page 31. When all groups have agreed on their answers, the results might be compared as a class.

Question 3. The students at this point know nothing of “knapping,” the art of making stone tools. It would appear from the pictures that all of the stone tools were made by flaking, or chipping, pieces of stone (flint) away until the desired tool was shaped. The chip-and-flake technique is characteristic of the Old Stone Age. Tools made in this way belong to the Old Stone Age culture even though the users may be living today.

4. All these tools, with the exception of the hammer, are for hunting and for preparing food caught in the hunt. Since these are the only tools in evidence, one might assume that these were full-time occupations.

5. A hunting society must follow the wild game. As it uses up the available game in one area, it must move on.

6. The hammer is of bone, and the arrowhead and spearhead would have had wooden shafts, which would normally rot away.

7. The club is not shown for the same reason as the wooden parts of the stone artifacts are not shown. Wood rots; stone does not. The one exception is a piece of the spear shaft. If found in a bog, the wood might be preserved.

8. The stones, unlike the wood, are still in existence, but bear no marks of human use, and cannot be identified as artifacts.

9. Dress would probably be furs and skins and the house some temporary structure of skins or branches that could be abandoned with no great loss.

10. The speed of the arrow would give man greater facility in hunting. Even the fastest of animals would now be within his range. He need not travel as far or as long in order to obtain the day's provisions. The spear can be thrown accurately, but has a more limited range. It is, however, much superior to a knife.

Extension: If any of the class become interested in tool manufacture they might research the different kinds of stone flaking techniques and demonstrate to the class. Try using the tools to see how efficient they are.

Unit 2: Two People of the Old Stone Age (pages 32-36): Students should understand that it is the way of life rather than the time in which a people lives that determines its culture. Stone Age cultures can still exist today.

Students should also be made aware of the different values of different societies. What is of value, materially and culturally, to one society is of little worth to another.

The Tasmanian (pages 32-33):

Question 1. The absence of tools other than the hand-axe and spear suggests an Old Stone Age culture. The lack of clothing other than skins and the flimsy sort of shelter are further indications. Living was at survival level.

2. The marginal nature of the economy meant that those who could not contribute to the gathering of food were, if it came to the point of starvation, the most expendable. This is simple Malthusian economics and has nothing to do with ethics or morals.

3. The major difference would be that instead of adding a weight to the head of the spear, the Tasmanian tapered it. This would have the same effect as weighting.

4, 5. As women are not hunters, all other tasks were left to them. In a hunting economy the high-status job is that of the hunter; all other activities are considered inferior or women's work. Discuss women's suffrage and the women's liberation movement.

6. A person conditioned to out-of-doors living will not be used to the damp confines of a room, and his health may suffer.

7, 8. In a marginal hunting society it would be a form of suicide to kill those who bring in the food. Therefore, deliberately killing another hunter was not an acceptable practice.

The Bushman of the Kalahari (pages 34-36): Question 1. He can tell the time quite well without a watch. The "Did You Know" section also provides answers. Gold has no value to survival in his way of life. The water in his skin was of far more value to him than the watch.

2. The Bushmen were nomads and would find it more trouble than it was worth to have to carry possessions.

3. Survival was a group effort. Those who were lucky enough to find food would automatically share it with the rest of the group. There was no place for animosities or hostilities in a society where all efforts were devoted to providing a living.

4. A large number have been attracted to the "good life" in the cities.

5. Discuss what is meant by happiness, and whether material objects really add to our enjoyment of life.

6. The stock of game and nuts would not support a larger group.

9. Most of the artifacts belong to a nomadic culture, the temporary grass huts, the open cooking fire, the nut diet, the garments worn, and the tools used. The metal pot looks completely out of place.

Extension: Students could find out more about the culture of the Bushmen, especially the lives of the children.

A display could be set up showing more about the culture of present-day Stone Age societies, using pictures or artifacts.

Unit 3: The Art of the Old Stone Age (pages 37-38): Students should understand that just as we can learn about Stone Age culture from artifacts, so we can from the art of the time. Introduce the lesson with a discussion on why people always seem to have painted pictures. Would today's reasons for creating art be the same as those of Stone Age Man? Students could compare these pictures with some recent Inuit prints and also with Indian rock paintings.

The Coming of the New Stone Age (pages 39-55)

This chapter should stress the importance of technological advances on cultural development. The implications of the ability to produce his own food are such that Stone Age Man could remain in one place; experiment with new forms of expression; refine tool making, pottery and weaving; develop new forms of shelter; and begin to develop a sense of community.

Teaching Suggestions: A time strip could be fastened to the wall so that students could see clearly the time blocks. Students could add their own family history to the strip. They could also record other historical events from the Social Studies program. Relationships should be compared in metric units.

Unit 1: Culture is Food, Shelter and Clothing (pages 40-41): The upper panels show the typical nomadic hunting, food gathering, clothing and natural shelter of Stone Age Man. The lower panel presents clear comparisons. The hunter becomes the farmer, the food gatherer becomes the food producer, food preparation improves with new pottery techniques, shelter and clothing advance in function and style.

Discussion of each panel should be carried out by examining the pictures across the page. Problems of gathering food should then be stressed in the first series and compared with the advantages of producing food illustrated in the lower series.

Extension: A display of local artifacts (stone tools, bone, pottery) should be obtained and displayed if possible.

Students could add a picture to either series as new ideas are presented.

Group projects could be organized on food preparation from cereal grains, tanning skins or weaving.

A skit on the life of a New Stone Age child might be prepared.

Unit 2: Culture is Tools (page 42):

The Old Stone Age tools are:

1. Arrowheads, arrows and spears for general hunting and war
2. Scraper for removing fat from fresh animal skins
3. Bone awl for piercing holes in animal skins for sewing

The New Stone Age tools are:

4. Stone axe for cutting trees for buildings and fortifications
5. Flint drills for making holes in stone (pendants)
6. Digging stick used in planting crops
7. Bone fish hook, carved from bone, probably deer, which is very hard
8. Stone hoe for digging and preparing fields
9. Ladle for preparing foods in large clay pots
10. Milling stone used in grinding grain into flour

Teaching Suggestions: Break the class into groups to find out how they think the different tools were used, with one group for each tool. This should be arranged before the lesson to allow the students time to think about possible tool use. Stress the new types of tools required for a food-producing culture. A classroom demonstration of grinding grain or making a pot from plasticene could also be arranged.

Extension: Set up a class display of present-day tools used in the same manner as those illustrated. Compare their efficiency with stone age tools. Discuss how long it would take to cut a tree down with a stone axe. Research indicates a sharp axe, in good repair, could drop a 10-cm tree in 20 minutes.

Culture is What We Eat and What We Wear (page 43):

The Old Stone Age food and clothing are:

1. Berries gathered over a large area and used to supplement diet
2. Skins, stretched and scraped
3. Deer hung to be cut up, principal food
4. Sandal of woven bark

The New Stone Age food and clothing are:

5. Seed in a pouch
6. Fish to supplement diet
7. Tobacco shows a new and expanded development
8. Corn, the main food produced
9. Moccasins show a change in style and significant advance

Teaching Suggestions: Several class members could

lead a discussion on preserving berries or meat, growing tobacco, making moccasins, or food preparation. Students should clearly understand that once early man could stay in one place for an extended period of time he could develop new cultural interests.

Extension: Prepare a New Stone Age meal using only fish, berries and ground corn, but no spices.

A class or group could study the history of smoking.

A bulletin board could be set up to display all the possible uses of a recently killed deer by Stone Age Man.

Unit 3: Culture is What We Live in and How We Build It (pages 44-45):

These pages are designed to show the changes in shelter from the natural or semi-natural setting of the nomadic Old Stone Age to the advanced construction of the New Stone Age.

Students should realize that although the ability to produce food was a great advance, it also created problems. One such problem was the need for new types of shelter that could be near the planted fields.

Teaching Suggestions: Introduce the lesson with problems for possible solution by the students.

1. What types of shelter might replace the cave for the New Stone Age culture?
2. What new building materials might be required?
3. How might new structure reflect changing family needs?

Extension: Students could construct models of New Stone Age shelters from straw, grass and plasticene. A presentation showing shelters used by contemporary nomadic peoples might provide some valuable comparisons. New Stone Age shelters are still used even in the modern world.

Unit 4: Culture is What We Create and What We Say (pages 46-47):

The ability to produce food allowed early man time to experiment and innovate. New forms of expression quickly emerged. These two pages illustrate some developments in art and the spoken word. Students are now approaching an important aspect of archaeological investigations — speculation based on artifacts. They should begin to realize that much of what we think is true about early man's ideas, beliefs, customs and daily life must be based on artifacts excavated from the earth.

Teaching Suggestions: Put the students in the role of the archaeologist. The artifacts in the top panel were excavated from Old Stone Age sites. What do they tell us about the daily lives of these people? Consider the clay figurines, stone pendant, clay dog, chipped effigy of a buffalo, shell bracelets, and turtle-shell rattle. Artifacts from the New Stone Age sites should then be considered in the same way. These are straw masks, clay bird pipe, necklace of cut stones, elaborate pottery, a ring and a comb.

Extension: Students could debate the following questions:

1. Why would early man want to hide his face behind a mask?
2. How were the small pieces of stone for the necklace cut? How were the holes made?
3. The clay duck is hollow with only one tiny hole under the neck. How would you make it? (Try

with plasticene.)

4. What materials might be used for painting pottery?

Culture is What We Say: Archaeologists can only speculate on the vocabulary used by early man. Students should be made aware of the limitations of this process. Expand the list of words for both Old and New Stone Age periods by checking the illustrations on previous pages.

Plan a short skit using the language of the New Stone Age man as a family might around the evening fire after a day of excitement. Students could suggest any words that might have been common to the New Stone Age but are seldom used today.

No written records have been found from the New Stone Age although there are detailed cave pictures. What might account for this situation?

Create a large class mural showing the difference in lifestyles between the Old and New Stone Ages.

Unit 5: What the Archaeologist Sees (pages 48-49):

These two pages continue to illustrate the archaeologist's problem in attempting to piece together the story of early man from limited information. All that is available to reveal the type of shelter and the people who used it are a drawing of the excavation and some artifacts.

Teaching Suggestions: Students should gain experience in drawing logical conclusions from the map and artifacts and the arrangement of items in relation to each other. A cooperative blackboard sketch could be developed as students provide ideas from the map and artifacts.

The floor map on page 48 depicts a pit house excavation (see also pages 44 and 61). In this case the dark areas indicate several posts used to hold up the poles. The entrance was over the fireplace so that the "chimney" and entrance were one. Broken pottery is often found near the fire pits. Stones were used against the dugout walls.

The plan on page 49 is clearly of a more advanced shelter. The swamp indicates the dwelling was on higher ground and protected by wet, open ground on at least two sides. Post holes and stones indicate firm walls and a roof structure similar to the timbered house on page 45. A side entrance existed with a separate roof opening for smoke.

Extension: Students might make a sketch of their own house excavation as it might be found by archaeologists in AD 2324. A reconstructed model of each excavation might be produced by several different groups working independently.

Unit 6: An Early Settlement (pages 50-53): The illustrations on these two double pages are intended to draw the New Stone Age study together. Students move from single housing units to a community complex complete with fortifications, community water supplies and family interdependence.

Teaching Suggestions: If possible, keep the children from looking ahead to pages 52-53 until they have finished 50-51. Students should use only the information on the map to develop their reconstruction ideas. Students might work first in small groups and then compare results as a class, adding and dis-

carding ideas to come to a class consensus. Finally, check the class's conclusions with pages 52-53.

Discuss the need for families to work together as an important aspect of New Stone Age life.

Compare the similarities and differences between a modern sub-division or small town and the New Stone Age community on pages 52-53.

Examine the illustration on pages 52-53 carefully and suggest ways the community design might be improved.

Extension: If at all possible, a visit to a local museum or prehistoric reconstruction site would be timely and highly valuable at this point.

Unit 7: Stone Age Man Long Ago and Today (page 54): The shading on the upper map illustrates the worldwide distribution of Stone Age people when the total global population was estimated at 10 million. The lower illustration indicates the last few present-day sites where people continue to live in a manner close to that of the Stone Age.

Students should realize there are still some Stone Age cultures surviving today. It is important they study the significance of the geographical locations of each group. Present-day world maps should be clearly visible during this lesson. Before the lesson, study groups might consider the effects of extreme cold or heat, and gross overpopulation on the living standards of today.

There could be a discussion on the future of the twentieth-century Stone Age cultures. Should modern people interfere with the lifestyles of these people?

The Web of Culture (page 55):

This illustrates changes in many aspects of culture as the Stone Age has evolved into modern living. It also raises the question of future cultures. The web provides for several discussions on people, the environment, or culture.

Teaching Suggestions: The lesson may be of greatest value by speculating on the future. Have the class divide into six groups and assign each group the problem of predicting the future in each direction of the web. The impact of war, natural disaster, pollution and other potential problems should be considered. A large wall mural might also be constructed to illustrate the web.

The Last Chapter (pages 56-63)

This section of *Stone Age Man* involves the students in modern archaeological studies with recent artifacts. The students are encouraged to examine illustrations of materials, consider their locations and then piece together the evidence to reconstruct the site — in one case an old school and in the other a long-abandoned rubbish dump.

Unit 1: An Old Pile of Junk (pages 56-57): The illustrations show artifacts recovered from a building site. They were buried when a school, built in 1914, was levelled in 1970. The artifacts found were:

1. Pieces of old glass used in the original windows
2. Broken pieces of slate, old blackboards
3. Bricks of yellow clay from the original 1914 wall
4. One speed skate, only the blade was found

5. Hand-cut beams with square nails from the original beams
6. School textbooks from 1917-1946
7. Box from the teacher's closet containing straight pens, ball point pens, hammer from the old school bell, hockey cards from the 1950s, National Geographic magazines from 1939-1943 and classroom maps from 1940

Teaching suggestions: Involve students in questions about recent cultural developments using illustrations of artifacts. Students must speculate on the evidence presented, not on what they think they know about the materials. Develop a blackboard outline from the students' answers to the discussion questions on each of the seven items. The students should then have sufficient information to speculate on the broader questions on page 56. If possible obtain some of the materials illustrated for a class display.

Extension: Collect photographs and stories that tell about school life before the television era. Visit an old school that was built around 1900. Study groups on glass making, slate blackboards, old ice skates, brick making or the history of pens might be organized.

Unit 2: Discovering the Unexpected (pages 58-59): As in the previous unit, old artifacts are illustrated and the students are asked to reconstruct the original site. In this case it is an abandoned rubbish dump, found three metres below ground level. The artifacts illustrated are:

1. Bottles of coloured glass
2. Metal containers
3. Bottle base showing a crown and the words "Bohemia glass"
4. Old cans all opened with an old style can opener and burned
5. Random materials of the period, such as bones, shells, and a cat's skull.

The concept of layering (stratigraphy) of materials is emphasized. Students should understand that cultural artifacts are usually found in layers with the most recent layer at the top and the oldest artifacts in the deepest layer of deposit. This unit also illustrates the importance of missing materials in excavations. The lack of any plastic materials is an important fact in dating this site.

Consider the questions on page 59 first and then attempt the problems on page 58. Carefully discuss what might be the oldest material and where it would have been located before the excavation was started.

Extension: Many archaeological sites often reveal evidence of both Old and New Stone Age occupation. In such a site how would you expect the artifacts on page 42 to be located when unearthed?

Unit 3: Clues That Reveal the Past (pages 60-61):

This exercise also presents artifacts from a garbage dump, but this time a New Stone Age one. The background illustration shows a burial site of the same period, associated with elaborate painted pottery. Burials were usually in the loose trash of garbage dumps where digging took little effort. The artifacts illustrated are:

1. Pouch of animal skin with squash seeds. Such

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finds are rare as exposure to moisture usually induces early rotting. The dry cave atmosphere occasionally preserves such material in an almost perfect state.

2. Two pieces of rim pottery, one crude with no pattern and one with clear decoration but no paint.
3. Clay effigy of a large mammal
4. Bone awl made from deer bone and used extensively in preparation of animal skins for clothing
5. Chipped stone scraper

The cutaway illustration of a pit house shows how the original support posts have rotted and been replaced by decayed matter. They show up as dark spots 20-40 cm deep when excavated. The large stones are part of the original roof entrance which also served as the chimney. The stones dropped to the floor at the time of destruction. The grinding stones were used for grain. The two inner post holes suggest posts that supported the roof.

Teaching Suggestions: Before studying this unit it is important for students to discuss preservation. In natural preservation animal skin and seeds are preserved due to lack of moisture in a cave. Bone is highly resistant to decay and may fossilize before it decays. Stone and clay are non-organic and suffer minimal damage from moisture, but in northern climates pottery is often destroyed by alternate freezing and thawing. Post holes contain the remains of the original decayed posts.

Archaeological sites can be damaged by erosion, ploughing, rodent digging, freezing and a number of related disturbances. A major cause of site destruction is the weekend amateur collector who often attacks a site in a greedy search for artifacts with little consideration for appropriate field techniques.

Extension: A study of major archaeological excavations could provide a wide variety of correlations to this unit. Contact local or provincial film libraries for

materials on archaeological excavations.

Unit 4: Putting the Pieces Together (pages 62-63):

This two-page illustration shows the development of containers from the Old Stone Age skin bag to the modern plastic jug. Steps in both the technology and design are shown.

Teaching Suggestions: This final Unit might be used to develop lessons of many different levels and focusses, but it is particularly conducive to a wide-ranging discussion that will tie together the many themes that have been raised in the book, and relate them to contemporary society and to the students' personal experiences. The theme of analogous functions might be developed, starting with the obvious parallels between the skin bucket and the plastic jug, and moving on to more complex ideas. Students might pick other stone age objects and work out the analogous modern equivalent.

Individual tools make a good starting point, but students should be encouraged to move on to more complex objects — a comparison between a stone age house and a modern one might take up the bulk of a lesson. And what is the modern equivalent of the village stockade on pages 52-53?

Discussion will probably move very quickly to the complexity and specialization of modern society, and students should be encouraged to speculate widely on both the factual and the qualitative differences. It is easier, for example, to buy a plastic jug than to labour at making a clay pot, but what is it like for the assembly line worker who makes them?

Extension: The class might make a mural recording their findings in this exercise, showing prehistoric and modern objects in parallel, sharing the work among groups so that all aspects of life are covered.

Students might also explore the historical development of things like pottery (or weapons, or transportation, or housing) from the Stone Age to the present, and display their findings to the class in reports or projects.

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